# Lamp Factory Notebook, N-86-08-25

This notebook covers the period August-October 1886. Most of the entries are by Ezra T. Gilliland. There is also one entry by Edison about telephone experiments. The notes and drawings by Gilliland concern telephones, a railway telegraph and telephone, and phonograph experiments. Included also is a set of undated drawings, probably by John F. Ott, for a village system generator. The spine is labeled "31." The book has been used in both directions. At one end of the book are 50 numbered pages preceded by one unnumbered page. The six pages of entries at the other end of the book are unnumbered.

Blank pages not filmed: 27-50.

N-86-08-25

MATTHIAS PLUM,
STATIONER, MERCANTILE PRINTER,
BOOK BINDER,
AND BLANK BOOK MANUFACTURER,
LITHOGRAPH CHECKS, BONDS, NOTES, &c., &c.
No. 777 Broad Street.
NEWARK, N. J.
PAPER WAREHOUSE.

August 25 1886.

J. F. Ott

Telephone Experiments

Try in telephone powdered —

Platinized light charcoal —

Silver plated

Silicon ✓ ✓

Tellurium

Sulphide Lead —
" Iron
Tin

Calcopyrites,

Following is
Ezra T. Gilliland's
writing.
See also Pg. 18.
N.R. Speiden

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Wednesday Aug 25th 1886

J. F. Ott

Silicon in the L D transmitter #1 shows very high resistance, first test get no results - measures 1800 - ohms - Heated the silicon on sheet iron pan to dry it and burn off any organic matter that may have been in it and get a better result, with four ④ cups Carbon battery it talks about 1/3 to 1/2 as loud as a hand telephone - measured 10.000 - ohms =

Ore pyrites - in No 1 L.D. talks about 1/2 as go as carbon - Washed it in Nitric acid improved it a very l

Continued from page 1 -

measured ohms _ J F. Ott

Antimony in #1 LD produced very little results about 1/2 as good as a hand telephone Resistance very low about .01 ohm -

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Alloy of antimony potas Talks about as loud as a hand telephone Resistance very high -

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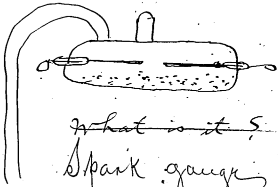
Cocoa nut Carbon -

On first test seems to work better than regular anthracite Carbon It is much lighter than anthracite carbon and instrument has better microphonic

J. F. Ott



~~What is it ?~~

Spark gauge.

Continued from Page 2

- microphonic qualities - J. F. Ott

Thursday Aug. 26th 1886

Continue Cocoa Carbon - Experiments -

Comparative weight of anthracite Carbon & cocoa carbon, the cocoa weighs a little more than one half as much -

Macaroni carbon weighs about 1/2 as much as as Cocoa and talks about the same both Cocoa & macaroni talk loud but do not articulate as well as anthracite. Treated the macaroni Carbon with Sulphuric acid and washed and cleaned it -

Continued from page 44:

J. F. Ott

cleaned it, which produced a slight improvement - not equal to the standard Carbon -

Tried Experiment of shunting primary & secondary Coil with 6 large leyden jars no perceptable improvement —

Shunted coil with Condenser, no improvement =

Tried Zinc dust no results - resistence very high =

all of the above Experiments have been tried on short Circuit - now preparing artificial line upon which Experiments will be tried hereafter -

Continued from page 5

J.F.Ott

Tellurium - talks nearly as well as Standard Carbon it has low resistance Is about 3 1/2 times as heavy as Carbon -

This is by far the best talking substance we have tried yet and comes the nearest to Standard Carbon will make further Experiments with other apparatus -

Friday Aug 27/86 J. F. Ott

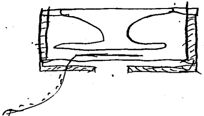
manganese peroxide -
no results -.

Granulated Zinc no results
Zinc is very heavy and
poor conductor - treated Zinc
with sulphuric acid improved
its conductivity somewhat but
not its talking qualities -

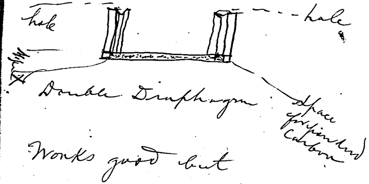
Tried regular standard
Carbon with platinum
scrap clippings mixed in
got good results talked
as well as standard
transmitter

Liquorice Carbon J.F.Ott
made from domestic
Liquorice gave medium
results talked about one
half as well as standard

Tried standard Carbon with
platinum disc float
in chamber no improvement
used dozen different
sizes and shaped floats -

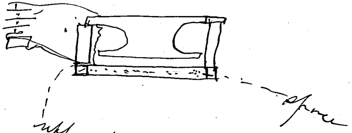


Saturday Aug 28th — J. F. Ott


hole
hole
Mica
Space for powdered Carbon

Double Diaphragm

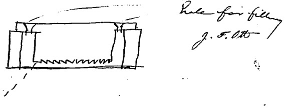
Works good but no better than standard



upper diaphragm connected with upper Electrode—

Works very well but no better than standard —

Continued from page 9 –



J. F. Ott

Corrugated Electrode the object being to prevent the granulated material from creeping away from the Center of the diaphragm – This worked splendidly and is very decidedly an improvement upon the regular standard form – further experiments will be made and a long test will be made to determine its staying qualities. Its talking qualities are superior as far as our tests have gone –

Tried powdered Feldspar coated with plumbago –

Continued from page 10.

J.F. Ott

no results - Tried sago covered with plumbago. talks about same as a hand telephone -

Wednesday Sept 1st 1886

made series of tests to determine lasting qualities of the new corrugated form of Electrode found that it was somewhat longer and come down near the Diaphragm which partly accounted for its increased loudness in last experiments -

It shows a marked improvement however -

Carbon made from vegetable Ivory works about as well as

regular standard Carbon
It is about as clear but
not quite so bright
Wrighs

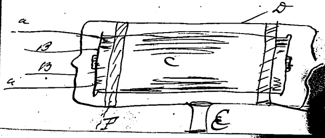
Thursday Sept 2 1886

Tested Carbon made of pith
talks about same as hand
telephone is very light so
much so than when cap is
removed from top of transmitter
and when speaking in a loud
tone of voice the carbon
will pour out of the holes in
the Electrode rising up ~~a~~
1/2 of an inch like water
out of a fountain we fire

Continued from page 12
J.F.Ott

well convinced that light Carbon is not as good as the heavier or at least heavy enough to fall back into position so as to respond to rapid vibrations ~~so as~~ and not be thrown up and held suspended in space = Tested Carbon made from imported liquorice Slight improvement over domestic liquorice but ~~not~~ does not compare to Standard Carbon -

Coil in Vacuum -



Continued from page 13

J. F. Ott

Description arrangement of coil in vacuum shown on page 13

A A ~~primary~~ secondary connections or leading in wires of primary current of coil -

B B ditto for primary

C - coil

D Glass tube

F F Hard rubber rings to hold coil in position in tube -

E opening in coil for Exhausting the air -

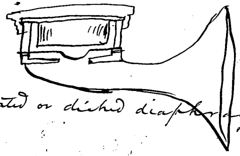
~~The quality of anthracite carbon used heretofore has~~ J. F. Ott

The quality of the anthracite coal used to make the Standard Telephone Granulated Carbon has been poor having been taken from the supply of coal furnished for steam purposes -

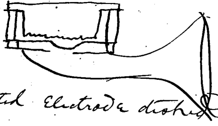
Suggest procuring of highest quality of anthracite coal let it be hard and glossy and presume the quality of carbon will be greatly improved

Friday Sept 3d 1886 —

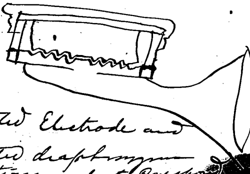
J. F. Ott



Corrugated or dished diaphragm



Corrugated Electrode dished diaphgm



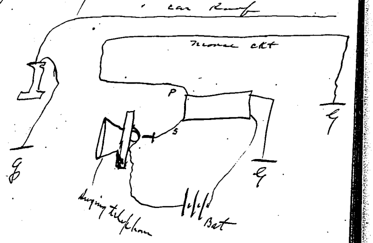
Corrugated Electrode and
Corrugated diaphragm
Corrugations made to correspond

Sept 30th 1886

Railway T & T Experiment.
Set up and tested the
Edison arrangement of
using a singing telephone
with cushion contact as a
substitute for the automatic
vibrator - It worked first
class - another was made
and forwarded to Rudd
for practical test on
the train on Chi St P
& Mil RR The
device was made and

Continued from page 17

set up as shown in the following sketch—


car Roof
Morse ckt
P
S
G
G
G
singing telephone
Bat

~~Sept~~ October 5th 1886

Commenced work on the standard Phonograph - Plan is to make a small compact instrument suitable for office use. It is not expected that it will talk loud but is to be made to be held to the listeners ear like a telephone and to be made to talk about as loud and clear as a good telephone on a short circuit - Is to be driven by a small motor, probably an electrical motor, and so made that it can be readily stopped and started

Continued from page 19

and started and backed up or reversed ~~or~~ set back - motors to arranged to run as near as possible a uniform speed and have a simple or convenient regulating device to control speed -

The greatest height of perfection will be to make cylinders or or plates containing the record interchangeable, i.e. a talking record made in one machine to be transferred and reproduced in another ~~machine~~ - although the machine will have great commercial value ~~even~~ if this cannot be accomplished -

Continued from page 20

The cylinder should be about ~~two~~ 1 inch to 1½ inches in diameter made of glass or polished steel should be about 4 or 5 inches in length and have 40 to 50 threads to the inch this will give it a Capacity of about 10,000 words based on 1½ diameter or 5 in in circumference 50 threads to inch would be 250 inches to inch of Cylinder in length, 5 in long would give ~~20~~ 1.250 inches to the Cylinder which say about 8 to 10 Words to the inch or 10.000 words to the cylinder - I believe that diaphragms and needles or points can be made ~~[illegible]~~ so cheap and simple that they can always be a part of the cylinder.

Continued from page 21

and removed from the machine with the cylinder and thereby we accomplish interchangeability, as there is no difficulty in repeating many times the record made if the point and diaphragm are not disturbed.

a cylinder its thread and diaphragm & point can be the detachable portion of a machine, and the running gear and motor and all other parts can be contained in the stationary part or balance of the mechanism,

The motor should be connected through the medium of a flexable shaft to prevent the buzz or jar being communicated to the Phonograph - This will also make the apparatus more

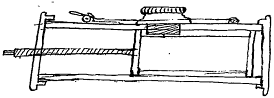
Continued from page 22

convenient to use providing it is made a size that will admit of its being held to the ear to listen and to the mouth to talk to it, in case it cannot be made light enough to admit of this then a flexable speaking tube can be used for talking into and listening, in this event the jaring sound of the motor will not be as likely to interfere —

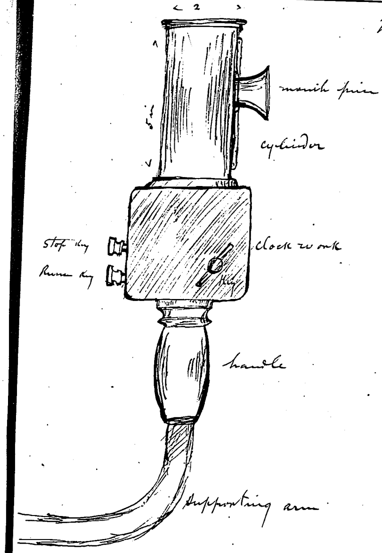
The cylinder should be made of polished glass or metal and the substance that receives the record or vibration should be either a shellac, gum or wax or something of that nature which can be applied with a brush or by dipping into a liquid solution and allowing it to dry on and can be

Continued from page 23-

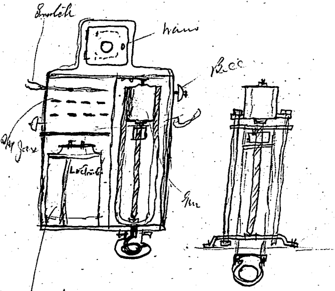
dissolved off and thereby prevent any scratching or injury to the cylinder and be cheap and require no special skill or devices to accomplish this most important part of the work - Gums or shellacs or substances of that nature will be less likely to produce the scratching sound which has been such a serious trouble in the use of tin foil If the diaphragm & needle are made to always be kept together then the cylinder can be prepared by the Phonograph Company or their Experts and furnished to the customers and a rental charged and a continuous revenue derived -

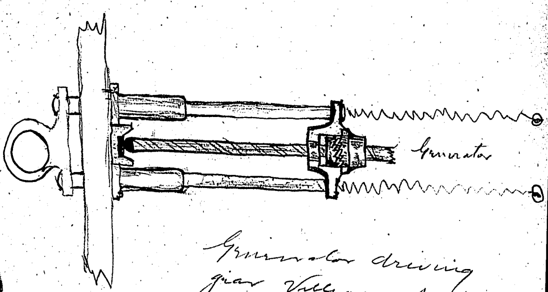


Plan for cylinder diaphragm and feed screw and bearings to always to kept together end of screw has square or other means of connecting it to the motor - the cylinder gets its bearing on a rim or flange located at each end which is made to nicely fit the ~~[illegible]~~ bore of the casting which holds the mouth piece - The mouth piece is made to adjust by revolving it is also fitted with a device for lifting it when cylinder is to be set back to ~~starting~~ start

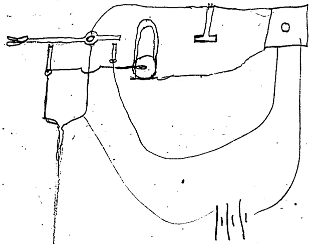

2
5 in
mouth piece
cylinder
Stop key
Run key
clock work
key
handle
Supporting arm

# Villiage System

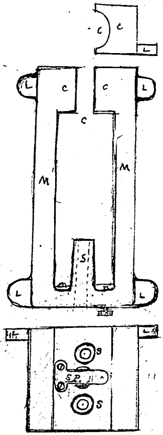

Switch
Trans
Rec
Dry Jars
Leclanche
Gen
Batt



Generator driving
gear Village System
or Railroad train
signal —



Connections Villiage System


C
C
L
L
C
C
L
C
M
M
S
L
L
L
L
S
S.P.
S

| | |
|---|---|
| C | Cylinder |
| MM | magnet |
| SS | Sleeves |
| ST | Step |
| L | Lugs |

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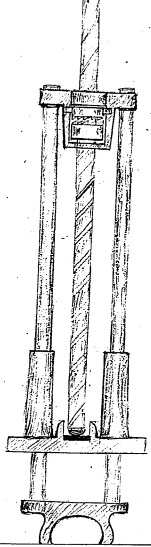
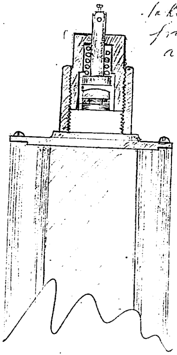
S.P. phosphor bronze springs for step and automatic.

Generator Frame
of Cast Iron



Generator tuning
gear worm
and pull device



Cylinder head
of Generator showing
arrangement for
taking current
from end of
armature—